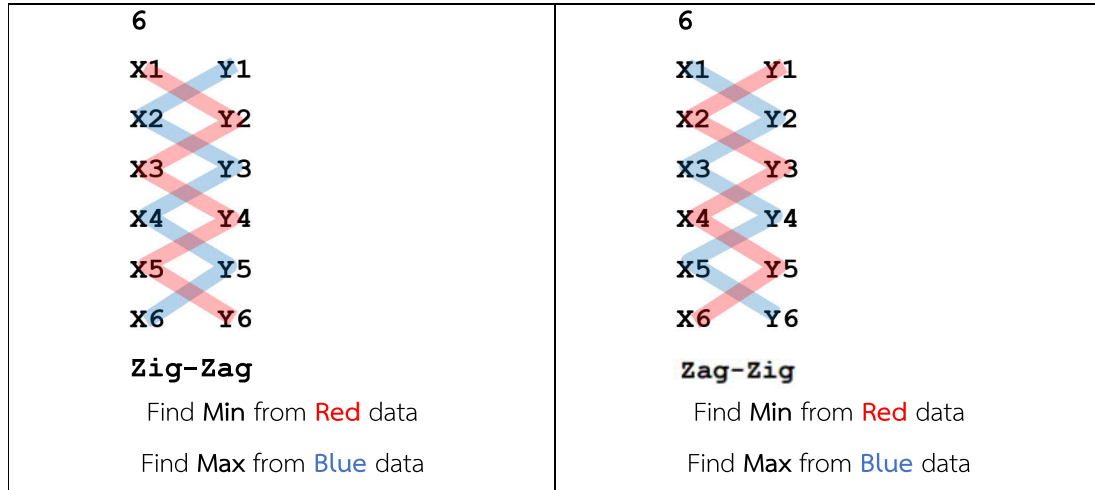


Zig-Zag / Zag-Zig (Version 1)

Write a program that input a list of pair of data X and Y, and last line receives a command that can be either **Zig-Zag** or **Zag-Zig**



- **Zig-Zag** case
 - Find Minimum number between X1, Y2, X3, Y4, X5, Y6, and Find Maximum number amongst Y1, X2, Y3, X4, Y5, X6,
- **Zag-Zig** case
 - Find Minimum number between Y1, X2, Y3, X4, Y5, X6, and Find Maximum number amongst X1, Y2, X3, Y4, X5, Y6,

Then output both Minimum and Maximum numbers

Input

The first line is integer N that represent number of data pair

N lines, each line contains two integers, separated by a space

The last line is string of either **Zig-Zag** or **Zag-Zig** (No other possible words).

Output

Minimum and Maximum numbers, separated by a space, as stated above.

Example

Input (from keyboard)	Output (on screen)
3 -10 10 20 -20 -30 30 Zig-Zag	-30 30
3 -10 10 20 -20 -30 30 Zag-Zig	10 -10